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Indian Standard

GLOSSARY OF TERMS

RELATING TO COPPER AND COPPER ALLOYS

PART 3 WROUGHT FORMS

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BUREAU OF INDIAN STANDARDS

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Indian Standard

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Indian Standard

GLOSSARY OF TERMS

RELATING TO COPPER AND COPPER ALLOYS

PART 3 WROUGHT FORMS

0. F O R E W O R D

0.1 This Indian Standard (Part 3) was adopted by the Indian Standards Institution on 25 November 1986, after the draft finalized by the Copper and Copper Alloys Sectional Committee had been approved by the Structural and Metals Division Council.

0.2 IS : 3288 (Part 1) covering terms for cast form and wrought form (main) was first published in 1965 and subsequently revised in 1973 and 1981. While reviewing the standard, the Sectional Committee decided to revise Part 1 and issue 7 more parts for making glossary more comprehensive by modifying the definition of several terms and by including more terms commonly used in copper industry. The parts are:

Part 1 Materials

Part 2 Unwrought and cast form

Part 3 Wrought form

Part 4 Processing

Part 5 Heat treatment

Part 6 Finishes

Part 7 Dimensional surfaces and structural characteristics

Part 8 Packing

0.3 This standard is intended mainly to cover technical definitions of terms relating to copper and copper alloys, and it does not necessarily include all the legal meanings of the terms. It is hoped that this standard will help in establishing a generally recognized usage for various terms encountered in the copper industry and eliminate any confusion which may sometimes arise due to individual interpretation of terms used in the industry.

0.4 In the preparation of this standard assistance has been derived from the following:

- | | |
|----------------|--|
| 1) ISO 197 | Copper and copper alloys—Terms and Definitions |
| ISO 197/1-1983 | Part 1 Materials |
| ISO 197/2-1983 | Part 2 Refinery shapes |
| ISO 197/3-1983 | Part 3 Unwrought products (Wrought products) |
| ISO 197/4-1983 | Part 4 Castings |
| ISO 197/5-1980 | Part 5 Methods of processing and treatment |

Issued by the International Organization for Standardization (ISO).

- 2) BS 1420-1965 'Glossary of terms applicable to wrought products in copper, zinc and their alloys', issued by the British Standard Institution, London.
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1. SCOPE

1.1 This standard (Part 3) defines terms relating to wrought forms used in copper and copper alloys.

2. WROUGHT FORMS AND DEFINITIONS

2.1 Angle — A section with two legs of equal or unequal length or thickness, extended at right angles unless otherwise stated, the edges and corners of which may each be either sharp or rounded.

2.2 Anode — A rolled, extruded and/or drawn product used as a positive electrode in electro-chemical processes. It may also be made by casting or electro-deposition.

2.3 Bar/Rod — A solid wrought product of uniform cross section along its whole length, supplied in straight length or coil form, whose width or greatest distance between parallel faces is greater than 6 mm.

2.3.1 Round Bar — The bar of round shape, also known as round rod.

2.3.2 Hexagonal Bar — The bar of hexagonal shape, also known as hexagonal rod.

2.3.3 Square Bar — The bar of square shape, also known as square rod.

2.3.4 Rectangular Bar — The bar of rectangular shape, also known as rectangular rod.

2.4 Bimetal — A rolled or drawn product combining two dissimilar metals between which a mechanical or metallurgical bond exists.

2.5 Blank — A shape cut from any wrought product and intended for further fabrication.

2.6 Bourdon Tube — Seamless tube of uniform wall thickness and particular cross section (usually oval) produced to special dimensional tolerances and temper for use as a pressure-actuated measuring device as in a Bourdon gauge.

2.7 Brazing Rod — Rod manufactured for use as the filler when making brazed joints.

2.8 Brazing Strip — Strip manufactured for use as the filler when making brazed joints.

2.9 Brazing Wire — Wire manufactured for use as the filler when making brazed joints.

2.10 Brazed Tube — Tube made from sheet or strip, with a longitudinal brazed joint.

2.11 Building Services Tube (Domestic Water Tube) — Some copper tube of certain standardized sizes for use in connection with services in or to buildings.

2.12 Busher — A rigid high-conductivity electrical conductor of solid or hollow section used as a common junction between a number of electrical circuits.

2.13 Capillary Tube — Seamless small bore tubing made to fine limits, with a high quality finish particularly in the bore.

2.14 Circle or Disc — A circular solid blank cut from a flat product.

2.15 Channel — A section with two straight parallel flanges extended at right angles from the same side of a web or base.

2.16 Closed End Tube — Tube with ends closed by corks, plastics caps, wooden stoppers, or rubber inserts as required.

2.17 Commutator Bar — A tapered or shaped section used for manufacture into commutator segments.

- 2.18 Commutator Segment** — A short length cut from a commutator bar which may, for example, be shaped as shown.
- 2.19 Coil** — A wound continuous length of material.
- 2.20 Drawn Flat Products** — Flat material with square or rounded corners or edges obtained by drawing through a die with or without subsequent rolling. It may be supplied in straight lengths, or coiled.
- 2.21 Embossed Product (Patterned Products)** — A product on which a raised or intended pattern has been impressed usually by rolling.
- 2.22 Engraving Plate (Engineering Sheet)** — Sheet or strip of suitable composition, temper and flatness the surface of which has been specially prepared for chemical, electro-chemical or mechanical engraving.
- 2.23 Ferrule Tube** — Seamless tubes having thick walls, for production of ferrules by external threading for fixing heat exchanger tubes into tube plates.
- 2.24 Finned Tube (Gilled Tube)** — Seamless tube having an extended surface, either by a bonded fin or a fin integral with the tube, to increase the effectiveness of heat transfer.
- 2.25 Flat Products** — A wrought product with rectangular or square solid section.
- 2.26 Flattened Wire** — Wire with rounded edges made by flattening round wire.
- 2.27 Fluted Tube** — Tube of nominally uniform wall thickness, having regular longitudinal concave corrugations with sharp cusps between corrugations.
- 2.28 Foil** — Flat product of thickness up to and including 0.15 mm, of any width generally not cut to length; usually in coil form but may also be in flat or folded form.
- 2.29 Forging, Stamping, Pressing** — A shape produced by hammering or processing in cold condition or hot condition.
- 2.30 Forging Bar, Forging Rod, Forging Stock** — Cast, extruded, rolled material intended for the production of forgings.

2.31 Formed Section — A product, other than tube, made from sheet or strip by a cold working process such as roll forming or drawing.

2.32 Heat Exchanger Tube (Condenser Tube) — Seamless tube with corrosion resistant characteristics suitable for use in heat exchangers and condensers.

2.33 Heat Exchanger Tube Plate (Condenser Tube Plate) — Plate manufactured to special flatness tolerances for use in heat exchangers and condensers.

2.34 Heading Wire — Wire of intermediate temper combining maximum stiffness with adequate ductility to allow the formation of a head by upsetting.

2.35 Hollow Conductor — A hollow product used as electrical conductor the cross section of which is completely encloses a void or voids.

2.36 Hollow Rod — A round hollow product, the cross section of which completely encloses a void or voids, which is normally produced by extrusion without subsequent cold working and in which the wall thickness is usually greater in proportion to the bore.

2.37 Hollow Bar — A round hollow bar, the cross section of which completely encloses a void or voids, which is normally produced by extrusion with nominal cold working, generally not intended for fluid flow but normally used for machine components.

2.38 Hollow Section — A hollow section, other than round, the cross-section of which completely encloses a void or voids.

2.39 Impact Extruded Product — The product of a process in which extrusion is affected by a sudden blow.

2.40 Lock Joint Tube (Lock Seam Tube) — Tube formed from sheet or strip, with a longitudinal mechanically locked joint.

2.41 Nail Wire — Wire of hard temper for the manufacture of nails.

2.42 Open Joint Tube — A shape approaching tubular form of nominally uniform wall thickness, but having a longitudinal, unjoined seam or gap of specified width not greater than 25 percent of the outside diameter or greatest overall dimensions.

2.43 Pin Wire — Wire of hard temper for the manufacture of pins.

2.44 Pinion Rod — A round rod with regular longitudinal serrations.

2.45 Pinion Tube — A tube with regular, longitudinal serrations outside and the plain inside surface.

2.46 Pinion Wire — Wire with regular longitudinal serrations.

2.47 Plate — Flat product over 10·0 mm thick, and over 300 mm wide.

2.48 Profile — A wrought product of uniform cross section along its whole length, with a cross section other than rod, bar, wire, tube, sheet or strip supplied in straight lengths or in coiled form.

2.49 Redrawing Rod — Rod intended for further cold drawing.

2.50 Redrawing Tube — Tube intended for further cold drawing.

2.51 Redrawing Wire — Wire intended for further cold drawing.

2.52 Refrigeration Tube — Sealed end tube suitable for refrigeration applications.

2.53 Rolled Flat Products — Flat product brought to final thickness by rolling. It may be supplied in straight lengths or in coiled form. The edges may be unsheared or finished by shearing, slitting, sawing, machining, or rolling.

2.54 Screw Wire — Heading wire intended for making screws.

2.55 Sealed End Tube — Tube with ends hermetically sealed to ensure that the bore remains clean and free from moisture.

2.56 Section — A solid product with cross section other than round, hexagonal, square or rectangular, such as angle or channel supplied in straight lengths or in coiled form.

2.57 Seamless Tube (Solid Drawn Tube) — Tube produced from a tube shell by drawing.

2.58 Sheet — Flat product, of exact length over 0·15 mm thick and up to and including 10 mm thick and over 300 mm wide. It may be supplied flat or folded or in coiled form.

2.59 Slug (Callot) — A blank prepared for extrusion or forging.

2.60 Pipe/Tube — A hollow wrought product of uniform cross section with only one enclosed void along its whole length, and with a uniform wall thickness, supplied in straight lengths or in coiled form and generally intended for fluid flow.

NOTE — The product may be with seam or seamless.

2.61 Strip — Flat product, over 0.15 mm thick and up to and including 10 mm thick, of any width, and generally not cut to length usually in coil, but may be flat or folded.

2.62 Tape — Strip or foil having width up to and including 50 mm. The width shall be greater in proportion to the thickness.

2.63 Tube Shell — A hollow cylinder produced by extrusion, rotary piercing, or casting for subsequent drawing into tube.

2.64 Twisted Tube — Tube or symmetrical cross section, having normally uniform wall thickness, and which has been twisted.

2.65 Welding Rod — Rod manufactured for use as the filler when making welded joints.

2.66 Welded Tube — Tube made from plate, sheet or strip with a longitudinal welded joint.

2.67 Welding Wire — Wire manufactured for use as the filler when making welded joints.

2.68 Wire — A solid section of uniform cross section along its whole length and the distance between two parallel faces not exceeding 6 mm; may be supplied in straight length or in coils or in spools.

2.68.1 Flat Wire — Wire with rounded edges made by flattening round wire.

2.69 Wire Rod — Rod like product of uniform cross section exceeding 6 mm used as intermediate product for further working, supplied in coil form.

2.70 Wrought — A general term for products obtained by hot and/or cold plastic deformation processes such as extrusion, forging, hot rolling, swaging, cold rolling or drawing, either exclusively or in combination. Examples of wrought products are rod, bar, wire, tube, profile, sheet, strip, forging.

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